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VIA ELECTRONIC FILING

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Written *Ex Parte* Presentation

GN Docket No. 14-177, *Use Of Spectrum Bands Above 24 GHz For Mobile Radio Services*

Dear Ms. Dortch:

On May 3, 2017, EchoStar Satellite Operating Corporation and Hughes Network Systems, LLC (collectively, "EchoStar"), Inmarsat, Inc. ("Inmarsat"), WorldVu Satellites Ltd., d/b/a OneWeb ("OneWeb"), SES Americom, Inc. ("SES"), O3b Limited ("O3b"), Intelsat Corporation ("Intelsat"), and The Boeing Company ("Boeing") (jointly, the "Satellite Broadband Operators") submitted an *ex parte* letter requesting that the Commission make the following changes to fixed satellite service ("FSS") ground station siting rules in the millimeter wave bands:[1/]

1. adopt a revised population coverage limit for FSS earth stations in the 28 and 37/39 GHz bands;
2. eliminate the rules limiting FSS operators to three earth stations in any given county (for 28 GHz) or Partial Economic Area ("PEA") (for 37/39 GHz); and
3. apply the 70/80/90 GHz band database approach to upper microwave flexible use service ("UMFUS") facilities.

Straight Path opposes these proposals. The Commission must not lose sight of the primary objective of this proceeding – to enable Fifth Generation ("5G") mobile terrestrial wireless services in the UMFUS bands. Despite that goal, satellite rights in these bands have already been expanded in this proceeding. There is no reason to further expand those rights to the detriment of 5G mobile terrestrial wireless services.

[1/] Letter from Jennifer A. Manner, Senior Vice President, Regulatory Affairs, EchoStar Corporation, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-177 *et al*. (filed May 5, 2017).

There Is No Correlation Between The Data Provided And The Proposal For Revised Population Coverage Limit

The data that have been provided by the Satellite Broadband Operators appear to suggest that the 0.1% population coverage limit makes it difficult to find a site for earth stations at least in some counties.[2/] As such, the Satellite Broadband Operators request the following expansion of FSS rights in both the 28 GHz band and the 37/39 GHz band:

- In the 28 GHz band, FSS interference zones may cover no more than 0.2% of the population for license areas with populations greater than 300,000; may cover no more than 600 people for license areas with populations between 6,000 and 300,000; and may cover 10% of the population for license areas with populations less than 6,000.[3/]
- In the 37/39 GHz band, FSS exclusion zones may cover no more than 0.2% of the population for license areas with populations greater than 1,500,000; may cover no more than 3,000 people for license areas with populations between 60,000 and 1,500,000; and may cover 5% of the population for license areas with populations less than 60,000.[4/]

First, the data only shows hypothetical siting issues with earth stations in county-wide license areas in 28 GHz band, assuming these earth stations need to comply with the recently adopted siting rules. However, these earth stations are already grandfathered by the rules. Second, there is no evidence that the same issue would occur in PEAs in the 37/39 GHz band, which have larger populations and areas that allow the FSS operators greater flexibility in choosing the earth station location to meet the population coverage limit.

More importantly, there is no logical connection between the data that the Satellite Broadband Operators presented and the significant expansion of the satellite rights that they request. The Satellite Broadband Operators claim that only four of the 17 gateway stations for EchoStar XIX would meet the newly adopted rules.[5/] However, the same data show that 12 of the 17 gateway stations actually meet the 0.1% population coverage limit. The five gateway stations that exceed the population coverage limit are shown below in Table 1.

2/ *See id.* at 3.

3/ *Id.* at 5.

4/ *Id.* at 5-6.

5/ *Id.* at 4.

Table 1. Grandfathered EchoStar XIX earth stations that exceed the 0.1% population coverage limit

City	County	State	Estimated Population in Contour	County Population
Billings	Yellowstone	MT	400	158,437
Albuquerque	Bernalillo	NM	984	676,953
San Jose	Santa Clara	CA	2056	1,919,402
Roseburg	Douglas	OR	168	108,457
Bismarck	Burleigh	ND	133	94,487

The fact that *some* of these stations – stations that were sited *before* the *Report and Order* in this proceeding was released and without considering the population coverage limit in site selection – happen to not meet the limit is no evidence that FSS operators cannot properly site their future earth stations according to the new rules. Moreover, there is no indication that the five stations noted above could not be made compliant with the new rules. FSS operators always have the option of shielding to reduce the size of interference zones.[6/] For example, the earth station in San Jose creates an interference zone that covers more than two thousand people. Had this station been deployed after the new rules were adopted, EchoStar would be required to better shield the site to reduce the interference zone so that fewer people are impacted. This is exactly what the rules are intended to accomplish – protect UMFUS services from excessive interference by future FSS earth stations while still allowing *limited* use of the band by FSS earth stations. Nor is there evidence showing these earth stations could not be located at alternative sites that meet the rules, had the population coverage limit been taken into account during site selection.

As the Commission has made clear in this proceeding, the rules it adopted are intended to provide "opportunities" and "flexibility" for FSS operators "to expand their limited use of the 28 GHz band to deploy earth stations that do not have to protect terrestrial services, while minimizing the impact on terrestrial operations."[7/] "Since there are over 3,000 counties in the United States, with a potential for up to three locations in each county, FSS licensees would have many choices for earth station locations."[8/] Similarly, in the 39 GHz band, the rules provide that "satellite operators will not necessarily need to deploy 39 GHz earth stations in the smaller, more densely populated PEAs."[9/] It is clear that the potential 9,000 interference zones in the 28 GHz band and the potential 1,200 exclusion zones in the 37/39 GHz band are "choices" for earth station locations, not a guarantee for three interference zones in each county or three exclusion zones in each PEA without proper siting and adequate shielding efforts from FSS operators.

6/ *See Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, GN Docket 14-177 *et al.*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014, ¶ 46 (2016) ("'[T]he most important aspect of a site is its shielding.'") (internal citation omitted) ("*Spectrum Frontiers Report and Order*").

7/ *See id.* ¶ 55.

8/ *See id.*

9/ *See id.* ¶ 92.

The Three Protection Zones Per License Area Limit Is Essential To Protect UMFUS From Satellite Interference

Straight Path opposes the Satellite Broadband Operators' proposal to remove the limit of three protection zones per PEA in the 37/39 GHz band.

Without limiting the number of protection zones, it is possible for FSS operators to ubiquitously deploy FSS earth stations in protection zones across the entire PEA – with each protection zone only covering a small number of people. In the extreme case, an FSS operator could claim that each protection zone covers no people, allowing an arbitrary number of protection zones while still claiming to meet the 0.1% population coverage limit. However, interference from 5G mobile wireless terrestrial services outside of the protection zones to these earth stations can degrade the performance of these earth stations as 5G deployment density, subscribers, and usage grow. This issue will be even more pronounced if an FSS operator decides to aggressively deploy many earth stations with small exclusion zones. While we recognize that FSS operators may not expect any level of interference level guarantee within the protection zones from 5G deployments outside of the protection zones, the proliferation of those earth stations will undoubtedly lead to complicated coordination and legal disputes.

Even for spectrum sharing between FSS and Fixed Services, the Commission has long adopted the "soft segmentation" approach in the V-band in which the 37.5 – 40 GHz band is primarily designated for terrestrial services with limited FSS use and the 40 – 42 GHz band is primarily designated for FSS with limited terrestrial use. The sharing scenario between UMFUS and FSS in the same band is more challenging. There is simply no evidence that high density deployment of UMFUS and high density deployment of FSS can coexist in the same band. As the UMFUS bands carry the great promise of gigabit mobility and a one thousand-fold capacity increase for 5G, the rules should not permit deployments of FSS earth stations that can cause catastrophic interference scenarios and potential legal and coordination disputes.

The limit of three exclusion zones per PEA strikes the right balance between enabling 5G services in the 37/39 GHz band and allowing *limited* use of this band by FSS. That is more than 1,200 potential locations for the limited number of gateway stations expected to be deployed in this band in the United States. In addition, current rules already allow multiple earth stations in each protection zone. Moreover, Satellite Broadband Operators always have other market-based methods to acquire additional earth station sites outside of the three protection zones in each PEA, if needed.

There is no record to justify permitting additional FSS gateway stations in this band. The number of gateway stations for FSS systems is small. For example, ViaSat-1 has 16 gateway stations in the United States.[10/] EchoStar XIX has 17 gateway stations.[11/] OneWeb is expected to

[10/] *See, e.g.*, ViaSat Inc., Application for Earth Station Authorizations, FCC International Bureau Presentation, File No. SES-LIC-20110418-00474, at 10 (filed Aug. 4, 2011).

[11/] *See* Letter from Jennifer A. Manner, Senior Vice President, Regulatory Affairs, EchoStar Corporation, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-177 *et al*. at 4 (filed May 5, 2017).

have approximately 50 gateway stations in the entire world.[12/] There is no data, or credible business case, to support the assertion that the satellite industry needs and can deploy more than 1,200 gateway stations in the 37/39 GHz band. If anything, the small number of earth stations for current FSS systems speaks volumes against that claim.

There Is No Justification To Apply A Database Approach To UMFUS Facilities In The 28 And 37/39 GHz Bands

Terrestrial operators have objected to the proposed use of a database to facilitate sharing in the 28 and 37/39 GHz bands.[13/] Straight Path agrees. Such a proposal would add unnecessary administrative complexity and restrict how operators can deploy, operate, maintain, and update the hundreds of thousands of 5G base stations (and even greater number of distributed antennas or small cells) in their networks. As 5G becomes part of the next generation broadband infrastructure that connects all smart phones and things and enables a wide variety of applications and services, the network itself will become much more diverse and dynamic than the current mobile networks. The notion of requiring every 5G facility to be registered is exactly contrary to that trend, with no justifiable benefit. In addition, 5G networks will likely encompass other bands outside of the UMFUS bands and may coexist with previous generations of cellular services for decades to come. It is inconsistent and discriminatory to put this unique burden on the equipment that supports the UMFUS bands. The Commission should allow *greater* flexibility to encourage mobile operators to deploy 5G in the UMFUS bands than in other bands.

Despite efforts in recent years, the database approach remains an expensive experiment.[14/] Additionally, the Commission has already allocated the 37 – 37.6 GHz band for sharing in which the database approach is expected to play an important role. There is no justification to further provide valuable spectrum for this experiment.

As a procedural matter, the Commission did not seek comment on whether UMFUS licensees should provide a database of their 5G deployments. The Commission only mentioned the database approach when it sought comments on whether to authorize satellite user equipment in the 37/39 GHz band.[15/] In response, Straight Path strongly objected to authorizing satellite user equipment in the 37/39 GHz band. It continues to believe that doing so will add a major risk to 5G systems and services in this band, depress the value of the spectrum, and discourage the significant investment required for 5G to succeed.

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12/ *See, e.g.*, WorldVu Satellites Limited, Application for Satellite Space Station Authorizations, OneWeb Non-Geostationary Satellite System, File No. SES-LIC-20110418-00474, at 6 (filed Apr. 28, 2016).

13/ *See, e.g.*, Reply Comments of T-Mobile, GN Docket 14-177 *et al.*, at 12 (filed Feb. 26, 2016).

14/ *See* Peter Rysavy, *Analyst Angle: 3.5 GHz and 5G – Learning From the TV White Space Debacle*, RCR WIRELESS NEWS (Aug. 10, 2016), http://www.rcrwireless.com/20160810/opinion/3-5-ghz-and-5g-learning-from-the-tv-white-space-debacle-tag9 ("Yet last year, in the U.S., only 600 wireless devices using white space networks were in operation.").

15/ *See Spectrum Frontiers Report and Order*, ¶ 502.

Ultimately, the debate about the rules governing the UMFUS bands is of two visions of 5G. In the first, 5G services will be widely deployed to deliver the promise of gigabit mobility and one thousand-fold capacity increase to the American public. In the second, 5G services will only be deployed in dense urban areas that function very much like Wi-Fi hotspots, leaving the UMFUS bands underutilized in much of the nation. The Satellite Broadband Operators' requests attempt to drive the Commission's spectrum policies towards the second vision. The first vision better serves the American public interest.

Pursuant to Section 1.106 of the Commission's rules, a copy of this letter has been filed in the record of the above referenced proceeding.

Respectfully submitted,

/s/ Davidi Jonas

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